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Amendments to the Claims

Please amend the claims as follows. This listing of the claims will replace all prior versions, and listings of claims, in the application:

1) (currently amended) A method of reducing stress-induced mechanical problems in optical quality components having a plurality of layers with different refractive indices, comprising carrying out the following steps in sequence:

i) fabricating a first structure resistant to wafer warp during thermal processing by PECVD (Plasma Enhanced Chemical Vapor Deposition), said first structure comprising a ~~depositing silica buffer layers respectively on a front and back face of a~~ silicon wafer having a first silicon nitride layer on a front face thereof, a first buffer layer on said first silicon nitride layer, a second buffer layer on a back face of said wafer, and a second silicon nitride layer under said second buffer layer ~~by PECVD (Plasma Enhanced Chemical Vapor Deposition) to provide a first structure resistant to wafer warp during thermal processing~~;

b) reducing optical absorption and compressive stress in said buffer layers by subjecting said first structure to a first thermal treatment, said first thermal treatment comprising:

i) stabilizing a diffusion tube at an initial stabilization temperature lying between 300°C and 700°C;

ii) inserting said first structure into said diffusion tube of step b(i);

iii) stabilizing said first structure at said initial stabilization temperature;

~~i)~~iv) decreasing compressive stress in said buffer layers from an initial compressive value by subjecting said first structure to a temperature that ramps up from ~~a~~ said initial stabilization temperature to a constant temperature of ~~at least~~between 800°C and 1300°C;

~~ii)~~v) further decreasing compressive stress in said buffer layers and reducing optical absorption by continuing to subject said first structure to said constant temperature of at least 800°C for a period of at least 30 minutes; ~~and~~

vi) causing said first structure to undergo an elastic deformation wherein the compressive stress in said buffer layers increases linearly to a final compressive value that is less

than said initial compressive value by ramping down said temperature to which said first structure is subjected to a final stabilization temperature; and

vii) extracting said first structure from said diffusion tube of step b(i) at said final stabilization temperature thereof;

c) depositing a silica core layer on said buffer layer on said front face of the wafer by PECVD to form a second structure;

d) reducing optical absorption and tensile stress in said core layer by subjecting said second structure to a second thermal treatment, said second thermal treatment comprising:

i) stabilizing a diffusion tube at a temperature at an initial stabilization temperature lying between 300°C and 700°C;

ii) inserting the second structure into said diffusion tube of step d(i) at said initial stabilization temperature;

~~i)~~iii) relieving tensile stress in said core layer from an initial tensile value by subjecting said second structure to a temperature that ramps up to a constant temperature of ~~at least~~between 600°C and 1300°C;

~~ii)~~iv) reducing optical absorption by continuing to subject said second structure to ~~a~~ said constant temperature ~~of at least~~between 600°C and 1300°C for a period of at least 30 minutes; and

v) causing said second structure to undergo elastic deformation and said tensile stress in said core layer to decrease linearly to a final tensile value that is less than said initial tensile value by ramping down said temperature to which said second structure is subjected to a final stabilization temperature;

vi) extracting said second structure from the diffusion tube of step d(i) at said final stabilization temperature thereof; and

e) depositing a cladding layer over said core layer.

2.(cancelled)

3.(cancelled)

4.(previously presented) A method as claimed in claim 1, wherein said first structure is maintained at said stabilization temperature for a period of from 1.3 to 130 minutes.

5.(previously presented) A method as claimed in claim 1, wherein said first structure is maintained at said stabilization temperature for a period of about 13 minutes.

6.(previously presented) A method as claimed in claim 1, wherein in step b(i) the temperature of said first structure is ramped up from said stabilization temperature to said temperature of at least 800°C at a rate lying in the range 1°C/min to 25°C/min.

7.(previously presented) A method as claimed in claim 6, wherein said rate is 5°C/min.

8.(previously presented) A method as claimed in claim 1, wherein said stabilization temperature lies in the range 300°C to 700°C.

9.(previously presented) A method as claimed in claim 1, wherein said stabilization temperature is about 400°C.

10. (previously presented) A method as claimed in claim 8, wherein in step b(iii) the temperature of said first structure is ramped down to said final temperature at a rate in the range 1°C/min. to 25°C/min.

11.(previously presented) A method as claimed in claim 10, wherein said rate is 2.5°C/min.

12. (previously presented) A method as claimed in claim 1, wherein in step b(ii) the temperature of at least 800°C to which said first structure is continued to be subjected for at least 30 minutes lies in the range of 800°C to 1,300°C.

13. (previously presented) A method as claimed in claim 1, wherein in step b(ii) the temperature of at least 800°C to which said first structure is continued to be subjected is 900°C.

14.(previously presented) A method as claimed in claim 1, wherein said first and second thermal treatments are carried out in the presence of an inert gas.

15. (previously presented) A method as claimed in claim 1, wherein said first and second treatments are carried out in the presence of a gas selected from the group consisting of:

nitrogen, oxygen, hydrogen, water vapour, argon, fluorine, carbon tetrafluoride, nitrogen trifluoride, and hydrogen peroxide.

16.(previously presented) A method as claimed in claim 14, wherein said inert gas has a constant flow rate.

17.(previously presented) A method as claimed in claim 16, wherein said flow rate of said inert gas lies in the range 1 liter/min. to 100 liters/min.

18. (previously presented) A method as claimed in claim 1, wherein in step d(ii) the temperature of at least 600°C to which said second structure is continued to be subjected lies in the range 600 to 1300°C.

19. (previously presented) A method as claimed in claim 18, wherein in step d(ii) the temperature of at least 600°C to which said second structure is continued to be subjected is 900°C.

20.(canceled)

21.(canceled)

22.(cancelled)

23.(cancelled)

24.(previously presented) A method as claimed in claim 1, wherein a protective layer is deposited on the back face of the buffer layer on the back side of the wafer and a compensating layer is deposited on the front face of the wafer.

25.(previously presented) A method as claimed in claim 24, wherein the protective layer and compensating layer are silicon nitride.

26.(cancelled)

27.(cancelled)

28. (cancelled)

29.(cancelled)

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30.(cancelled)

31.(cancelled)